

## PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION  
(PCT Rule 61.2)

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C.20231  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 12 September 2000 (12.09.00)	
International application No. PCT/GB00/00174	Applicant's or agent's file reference HL71607/001/DCO
International filing date (day/month/year) 24 January 2000 (24.01.00)	Priority date (day/month/year) 22 January 1999 (22.01.99)
Applicant ARMOUR, Simon et al	

## 1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:  
21 August 2000 (21.08.00)

in a notice effecting later election filed with the International Bureau on:  
\_\_\_\_\_

2. The election  was

was not

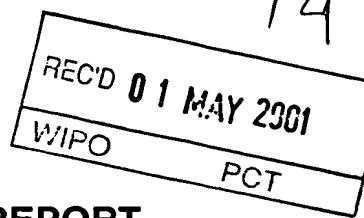
made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.36	Authorized officer Olivia TEFY Telephone No.: (41-22) 338.83.38
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Form PCT/I8/331 (July 1992)

GB0000174

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference HL71607/000/DCO	FOR FURTHER ACTION <span style="float: right;">See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)</span>	
International application No. PCT/GB00/00174	International filing date (day/month/year) 24/01/2000	Priority date (day/month/year) 22/01/1999
International Patent Classification (IPC) or national classification and IPC H04L27/26		
Applicant UNIVERSITY OF BRISTOL et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I  Basis of the report
- II  Priority
- III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV  Lack of unity of invention
- V  Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI  Certain documents cited
- VII  Certain defects in the international application
- VIII  Certain observations on the international application

Date of submission of the demand 21/08/2000	Date of completion of this report 27.04.2001
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Haas, H Telephone No. +49 89 2399 8800



# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/00174

## I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-10 as originally filed

Claims, No.:

1-9 as originally filed

Drawings, sheets:

1/4-4/4 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/00174

the drawings,      sheets:

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)      Yes: Claims 1-9

No: Claims

Inventive step (IS)      Yes: Claims 1-6

No: Claims 7-9

Industrial applicability (IA)      Yes: Claims 1-9

No: Claims

### 2. Citations and explanations see separate sheet

## VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:  
see separate sheet

## VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
see separate sheet

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB00/00174

**SECTION V**

The subject-matter of the international application relates to signal processing in an OFDM receiver (claim 1).

The nearest state of the art is US-A-5 796 814, which discloses a semi-fixed equalizer for correcting slow variations of the communication channel like channel noise followed by an adaptive equalizer to compensate for superimposed noise.

The remaining documents of the International Search Report only refer to a more general prior art background in communications systems.

To solve the problem of adapting existing equalizer structures to OFDM receivers with a consequent improvement of the noise in the received signals, according to claim 1 of the international application an additional channel estimation is applied to form an estimate of the transmitted sequence, which is fed back to the equalizer.

This subject-matter is not rendered obvious, alone or in combination, by the documents of the International Search Report. Inventive activity and novelty are therefore acknowledged (Art. 33 (3) and (2) PCT).

The same applies to dependent claims 2 to 6.

As independent claims 7 and 8 do not contain the features of an additional channel estimation, they appear to relate to conventional equalizer structures as disclosed for example in D1 (see Figure 3 as well as claims 1 and 2). They consequently lack inventive step (Art. 33(3) PCT). This also applies to dependent claim 9, which only contains the obvious additional feature of outputting an equalized signal.

As the subject-matter of the application relates to communication channels, the criteria of industrial applicability is met (Art. 33 (4) PCT).

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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International application No. PCT/GB00/00174

**SECTION VII**

The independent claims are not in the two-part form as required by Rule 6.3(b) PCT, whereby the features known from document D1 (US-A-5 796 814) should be placed in the preamble.

To meet the requirements of Rule 5.1(a)(ii) PCT, documents D1 and D2 (EP-A-0 797 333) should have been identified in the description and the relevant background art disclosed therein should have been briefly discussed.

Reference signs in parentheses should have been inserted in the claims to increase their intelligibility, Rule 6.2(b) PCT. This applies to both the preamble and characterising portion.

**SECTION VIII**

The subject-matter of the international application, in particular the feature, that receiver and equalizer structures are adapted to allow adjustment of equalizer tap coefficients in an OFDM receiver dependent on the feed-back of data decisions, is considered to involve an inventive step. This feature is consequently essential to the definition of the invention:

Since independent claims 7 and 8 do not contain this feature in a sufficiently clear wording (this feature is, for example, clearly recited in the last passage of claim 1) they do not meet the requirement following from Article 6 PCT taken in combination with Rule 6.3(b) PCT that any independent claim must contain all the technical features essential to the definition of the invention.

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:	RECEIVED WITH THANKS 30 APR 2001	
O'Connell,David C. HASELTINE LAKE & CO. Imperial House 15-19 Kingsway London WC2B 6UD GRANDE BRETAGNE	RECORDS	RECORDED COPY

PCT

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT  
(PCT Rule 71.1)

Applicant's or agent's file reference HL71607/000/DCO	IMPORTANT NOTIFICATION	
International application No. PCT/GB00/00174	International filing date (day/month/year) 24/01/2000	Priority date (day/month/year) 22/01/1999
Applicant UNIVERSITY OF BRISTOL et al.		

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

#### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Barrio Baranano, A  Tel. +49 89 2399-8621
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# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference HL71607/000/DCO	FOR FURTHER ACTION		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/GB00/00174	International filing date (day/month/year) 24/01/2000	Priority date (day/month/year) 22/01/1999	
International Patent Classification (IPC) or national classification and IPC H04L27/26			
<p>Applicant UNIVERSITY OF BRISTOL et al.</p> <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p> <p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input checked="" type="checkbox"/> Certain defects in the international application</li> <li>VIII <input checked="" type="checkbox"/> Certain observations on the international application</li> </ul>			
Date of submission of the demand 21/08/2000	Date of completion of this report 27.04.2001		
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	<p>Authorized officer Haas, H</p> <p>Telephone No. +49 89 2399 8800</p> 		

INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

International application No. PCT/GB00/00174

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	No:      Claims
Inventive step (IS)	Yes:      Claims 1-6
	No:      Claims 7-9
Industrial applicability (IA)	Yes:      Claims 1-9
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see separate sheet

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